

STATE ROUTE 16: TACOMA NARROWS BRIDGE PROJECT

Tacoma Narrows Bridge Project Nighttime Construction Noise Quarterly Report: October - December 2003

*Submitted on January 15, 2004 to:
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**Washington State
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INTRODUCTION

The Washington State Department of Transportation (WSDOT) and Tacoma Narrows Constructors have been issued a noise variance by the Tacoma-Pierce County Health Department. The variance was issued for noise levels expected to result from construction work between 10:00 p.m. and 7:00 a.m. in conjunction with the construction of the new Tacoma Narrows Bridge. The variance was issued with several conditions, including that WSDOT provide quarterly reports to the Health Department on activities relevant to the variance.

On October 1, 2003, the Board of Health, as part of a public hearing, extended the noise variance for the TNB project through November 30, 2004.

This is the fourth quarterly report and covers the period including October through December 2003. The following areas are addressed in this report:

- ?? Overview of Nighttime Construction Activities
- ?? Communication Activities
- ?? Complaint Response & Resolution
- ?? Focused Noise Monitoring of Temporary Concrete Batch Plant Operations
- ?? Upcoming Activities
- ?? Attachments
 1. Nighttime construction activities
 2. Public Mailings
 3. Citizen Contacts & Complaints

OVERVIEW OF NIGHTTIME CONSTRUCTION ACTIVITIES : OCTOBER - DECEMBER '03

Work activities took place on the project site between 10:00 p.m. and 7:00 a.m. on a total of 92 nights during the period including October, November, and December 2003. Of this total number of nights, there were 19 nights when specific construction activities took place, and 73 additional nights when the two new caissons were staffed by project workers.

Nighttime construction work during this period took place along the SR 16 mainline roadway between 24th St. and 36th St., at the temporary concrete batch plant, and in the Narrows at the new bridge caisson locations. Specific descriptions of the type, location, and times of this work are provided in Attachment 1.

During this period, four complaints were received by WSDOT about noise as a result of a construction activity taking place between 10:00 p.m. and 7:00 a.m.

The caisson work sites in the Narrows are staffed 24 hours per day, 7 days per week. Two work shifts are scheduled on working days. Construction activities include barge operations, rebar installation, and concrete placement. During hours when construction work is not actively underway, workers on the site may be operating generators or maneuvering barges.

Regular concrete production, typically two or three times per week, continued during this period at the temporary concrete batch plant. On 7 occasions during this period batch plant operations began between 5:30 - 7:00 a.m. On no occasions during this period did batch plant operations extent after 10:00 p.m.

Roadway work requiring temporary lane closures took place during nighttime hours on the SR 16 mainline between 24th Street and 36th Street (8 nights.)

COMMUNICATION ACTIVITIES

> INFORMATION & HOT LINE

A telephone information and “hot” line continues to be operational providing information about upcoming nighttime construction activities. It also provides residents an opportunity to communicate at any time of day with a live person about questions and/or concerns relating to the project nighttime construction activities and noise. This service operates 24 hours a day, 7 days per week. The phone number is 253-620-4440.

Following the October 1st public hearing for extension of the noise variance, the introductory wording on the hotline was modified at the request of the Health Department to emphasize the purpose and use of the hotline. Nighttime construction activity information is provided in a recorded message, updated on a daily basis to provide the most current information. Messages can also be left on the information line concerning the nighttime construction activities and these messages will be responded to within 24 hours (on project working days).

Residents can also communicate directly with a person who can provide relevant information about project nighttime construction activities, accept comments, and if appropriate, directly contact WSDOT project staff. When project construction activities are taking place, the person staffing the “hot line” is able to immediately contact WSDOT project staff and to relay comments/complaints received. If requested by the caller, WSDOT project staff will return the call as soon as feasible.

> WEBSITE

To maximize public access to timely information about nighttime construction activities, a section of the project's web site is dedicated to providing quick, easy access to information concerning nighttime construction activities. Information on this web site is updated daily to provide the most current information.

Comments and concerns about the nighttime construction activities can be submitted to project staff through the web site and will be responded to within 24 hours (on project working days).

Following the October 1st public hearing for extension of the noise variance, the introductory wording on the nighttime construction page of the website was modified at the request of the Health Department to emphasize the availability of the hotline for contacting project staff about nighttime construction noise issues.

> POSTAL CARRIER ROUTE MAILINGS

As described in the Communication Plan for Nighttime Construction Noise, information sheets have been delivered by postal carrier routes to residences and businesses along the project corridor.

Prior to each calendar month, residents along the project corridor have been mailed notification flyers about nighttime work activities scheduled to take place throughout the upcoming month.

Copies of the notification flyers distributed during this period are provided in Attachment 2. Following the October 1st public hearing for extension of the noise variance, the introductory wording on the fliers was modified at the request of the Health Department to emphasize the availability of the hotline for contacting project staff about nighttime construction noise issues.

COMPLAINT RESPONSE & RESOLUTION

During this quarter (October - December '03), WSDOT received four complaints attributable to noise from a project construction activity occurring between 10:00 p.m. and 7:00 a.m.

Attachment 3 includes the Construction Noise Database entry sheets from these contacts as well as copies of relevant e-mail correspondence.

All of the complaints received during this quarter were with regard to nighttime construction work on westbound mainline SR 16 between 24th St. and 36th St. This work, primarily installation of stormwater culverts, required the temporary closure of traffic lanes on mainline SR 16. This work is restricted to nighttime hours so as to avoid extensive traffic backups on SR 16.

FOCUSED NOISE MONITORING OF TEMPORARY CONCRETE BATCH PLANT OPERATIONS

Operations

During this period, concrete production for the new bridge caissons and anchorages took place at the temporary concrete batch plant typically two to three times per week. The majority of concrete production for the project takes place between 7:00 a.m. and 10:00 p.m. Due to the magnitude and thus duration of concrete pours for the new bridge caissons, anchorages, and towers, some concrete production is expected to begin before 7:00 a.m. or extend after 10:00 p.m. Predominately, operation during the noise variance period will be early morning starts at about 5:00 a.m.

Equipment operating within the batch plant site includes “redi-mix” concrete trucks and front end loaders.

A stationary concrete pump has been installed in the vicinity of the bridge anchorages. For pours going to caisson No. 12 (Gig Harbor side of the Narrows), “redi-mix” trucks will carry concrete from the batch plant to the concrete pump location shown on page 7.

For concrete pours at caisson No. 11 (Tacoma side of Narrows) or the east anchorage, concrete trucks enroute to the Tacoma side drive from the batch plant underneath SR 16, along the previous Stone Drive, and enter eastbound SR 16 using the temporary ramp from Stone Drive. Trucks returning from the Tacoma side exit SR 16 to 24th St. and then travel 14th Ave. back to the batch plant.

Oct – Dec Noise Variance Period Operation

During October, November, and December, operations at the batch plant site took place during the noise variance period (between 10:00 p.m. and 7:00 a.m.) on 7 occasions, totaling 4 1/2 hours of operation. The specific dates and hours are as follows:

| <u>Date</u> | <u>Hours of Batch Plant Operation During Noise Variance Period</u> |
|-------------|--|
| Oct 15 | 5:30 – 7:00 a.m. |
| Nov 22 | 6:00 – 7:00 a.m. |
| Nov 25 | 6:30 – 7:00 a.m. |
| Dec 3 | 6:30 – 7:00 a.m. |
| Dec 4 | 6:30 – 7:00 a.m. |
| Dec 16 | 6:45 – 7:00 a.m. |
| Dec 18 | 6:45 – 7:00 a.m. |

Noise Monitoring

Focused noise monitoring was conducted during this period at locations surrounding the batch plant operation. The diagram on page 7 shows the general area of the temporary batch plant and locations where noise monitoring is conducted. Noise readings have been taken during periods of no construction activity to verify the ambient background noise typically experienced at these locations. Noise readings are also taken when construction activities are underway during the noise variance period (10:00 p.m. – 7:00 a.m.).

Table 1 (pg. 8) lists noise readings taken during the October – December period for monitoring of noise levels associated with construction activities at the batch plant site. Additional information recorded for each noise reading including precise location coordinates, noise meter information including type and calibration, weather conditions, etc., are not provided in this table, but are available upon request.

Table 2 (pg. 9) shows a comparison for each monitoring location of the ambient noise readings with those when the batch plant is being operated. Since during this quarter the batch plant was in operation a total of 4 1/2 hours during the noise variance period, measurements of batch plant noise levels could only be taken at five of the monitoring locations.

All noise measurements taken are in terms of dBa or "a" weighted decibels. The commonly used frequency weighting for environmental noise is A-weighting (expressed as dBa), which simulates how an average person hears sounds. Three noise measurement values are listed for each monitoring event. These measurements - L_{10} , Leq , and L_{90} are defined as follows:

L_{10} : a statistical descriptor describing the sound pressure level exceeded 10% of a measurement period.

Leq : The reading over the representative period of time we took the measurement, i.e. if we took a measurement for 15 minutes and that was representative for the situation, the Leq would be what the sound level was for that period.

L_{90} : a statistical descriptor describing the sound pressure level exceeded 90% of a measurement period.

The noise variance states that expected noise levels from concrete production activities (including the batch plant and pumping equipment) could be approximately 85 dBa within 50 ft. of the equipment. Monitoring location BP-1 is approximately 50 ft. from the batch plant.

Blank for diagram of noise monitoring locations

Table 1

| Monitoring Location | Date & Time | Construction Activities Underway? | Noise Readings (dBA) | | | |
|---------------------|----------------------------|-----------------------------------|----------------------|-----------------|-----------------|------------------|
| | | | L ₁₀ | L _{eq} | L ₉₀ | L _{max} |
| BP-1 | 11/4/03 5:31-6:01 a.m. | <u>NO</u> Ambient noise | 71 | 69 | 66 | 78 |
| BP-2 | 11/4/03 6:03-6:33 a.m. | <u>NO</u> Ambient noise | 66 | 64 | 61 | 72 |
| BP-3 | 11/4/03 6:38-7:08 a.m. | <u>NO</u> Ambient noise | 57 | 55 | 51 | 73 |
| BP-1 | 11/22/03 6:00-6:30 a.m. | <u>Yes</u> Batch Plant | 72 | 70 | 67 | 79 |
| BP-2 | 11/22/03 6:32-7:02 a.m. | <u>Yes</u> Batch Plant | 68 | 66 | 62 | 82 |
| BP-3 | 11/22/03 7:09-7:39 a.m. | <u>Yes</u> Batch Plant | 55 | 54 | 52 | 67 |
| BP-4 | 11/25/03 5:47-6:02 a.m. | <u>NO</u> Ambient noise | 72 | 70 | 68 | 79 |
| BP-5 | 11/25/03 6:15-6:30 a.m. | <u>NO</u> Ambient noise | 71 | 69 | 66 | 75 |
| BP-8 | 11/25/03 6:41-6:56 a.m. | <u>Yes</u> Batch Plant | 66 | 65 | 63 | 75 |
| BP-6 | 11/26/03 6:42-6:57 a.m. | <u>NO</u> Ambient noise | 62 | 60 | 52 | 78 |
| BP-7 | 11/26/03 5:22-5:37 a.m. | <u>NO</u> Ambient noise | 64 | 62 | 59 | 70 |
| BP-8 | 11/26/03 5:44-5:59 a.m. | <u>NO</u> Ambient noise | 67 | 65 | 63 | 70 |
| BP-9 | 11/26/03 6:01-6:16 a.m. | <u>NO</u> Ambient noise | 64 | 62 | 59 | 66 |
| BP-10 | 11/26/03 6:22-6:37 a.m. | <u>NO</u> Ambient noise | 70 | 67 | 61 | 78 |
| BP-1 | 12/3/03 5:50-6:20 a.m. | <u>Yes</u> Batch Plant | 71 | 70 | 69 | 87 |
| BP-2 | 12/3/03 6:32-7:02 a.m. | <u>Yes</u> Batch Plant | 68 | 67 | 66 | 84 |
| BP-3 | 12/4/03 6:20-6:50 a.m. | <u>Yes</u> Batch Plant | 57 | 55 | 54 | 67 |
| BP-5 | 12/16/03 6:30-7:00 a.m. | <u>Yes</u> Batch Plant | 70 | 69 | 65 | 83 |

Table 2 provides a comparison between construction and ambient background noise levels at each of the monitoring locations.

Table 2

| Monitoring Location | Measured Noise Levels (dBa) | | |
|----------------------------------|-----------------------------|-----------------|-----------------|
| | L ₁₀ | L _{eq} | L ₉₀ |
| BP-1 Ambient | 71 | 69 | 66 |
| BP-1 With Batch Plant Operations | 72 | 70 | 67 |
| | 71 | 70 | 69 |
| | | | |
| BP-2 Ambient | 66 | 64 | 61 |
| BP-2 With Batch Plant Operations | 68 | 66 | 62 |
| | 69 | 67 | 66 |
| | | | |
| BP-3 Ambient | 57 | 55 | 51 |
| BP-3 With Batch Plant Operations | 55 | 54 | 52 |
| | 57 | 55 | 54 |
| | | | |
| BP-5 Ambient | 70 | 69 | 65 |
| BP-5 With Batch Plant Operations | 71 | 69 | 66 |
| | | | |
| BP-8 Ambient | 67 | 65 | 63 |
| BP-8 With Batch Plant Operations | 66 | 65 | 63 |

The comparative noise readings shown in Table 2 for locations BP-1, 2, 3, 5, and 8 show very little, if any, increase in noise levels (L₁₀, L_{eq}, or L₉₀) with the batch plant in operation when compared with ambient readings.

Noise Complaints

During the October through December period there were no complaints received by WSDOT from residents in the area regarding noise from construction activities associated with the batch plant.

During the October 1st public hearing for extension of the noise variance, one individual (whose residence is on Dock St. in downtown Tacoma) complained about the batch plant noise level as he experienced it when driving on SR 16.

UPCOMING ACTIVITIES

During the upcoming quarter, January - March '04, construction activities will continue throughout the project site along the SR 16 corridor from Jackson Avenue to the vicinity of 36th Street.

During late January and early February, roadway work along mainline SR 16 will be taking place during nighttime hours on the Pierce County side of the Narrows, primarily between 24th St. and 36th St. This work, including installation of drainage culverts along the westbound SR 16 roadway, will take place during nighttime hours due to the need for the temporary closure of traffic lanes on SR 16.

Concrete production will continue at the temporary batch plant typically two to three times per week. Concrete pours will be at both caisson locations in the Narrows and both anchorage sites for the new Narrows Bridge. The majority of concrete production will take place between 7:00 a.m. and 10:00 p.m., but some pours will start earlier and may continue later due to the magnitude of the pours as described in the noise variance.

Work activities in the Narrows will continue at both new caisson locations. The caisson work sites will be staffed 24 hours per day, 7 days per week. Both caissons have touched down on the Narrows bottom and dredging operations will begin in mid-February. The dredging operations are expected to take place 24 hours a day a minimum of five days per week. Six or seven day work weeks may be necessary to stay on schedule. Dredging will be conducted using derrick barges and clamshells. The noise variance states that expected noise levels from this activity could be approximately 90 dBa within 50 ft. of the equipment. Dredging will continue until both caissons have reached the necessary embedment in the Narrows bottom, scheduled to be accomplished by June 2004.